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Commissioner

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December 7, 2018

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Patrick Palmer
New York State Department of Health
Bureau of Water Supply Protection, NYC Watershed Section
Empire State Plaza, Corning Tower, Room 1198
Albany, NY 12237

Katie Lynch
United States Environmental Protection Agency
Clean Water Division - New York City Water Supply Protection Program
290 Broadway, 24th Floor
New York, New York 10007-1866

RE: Monthly Water Quality Report for November 2018

Dear Ms. Huang, Mr. Palmer and Ms. Lynch:

Enclosed, please find the New York City Water Quality report for the month of **November 2018**. There was no well pumpage to distribution in the Groundwater System this month. Croton water fed into distribution from November 1 through November 30, 2018. In addition to the following list of compliance reports, a disc of electronic files containing compliance and non-compliance data for this month is enclosed with this report.

- Raw Water Fecal Coliform Report
- Raw Water Turbidity Report
- Distribution Microbiological Compliance Reports
 - Summary
 - Positive Samples
 - Resamples
- Chlorine Residual Reports
 - Entry Point Online
 - Entry Point Daily Minimum
 - Heterotrophic Plate Count
 - Monthly Summary
- Distribution Turbidity Reports
 - Distribution Turbidity Report
 - Source Water > 1.49 NTU Table
- Color Entry Point Report

- Fluoride Reports
 - Fluoride Entry Point Report
 - Distribution Fluoride Report
- Quarterly Disinfection By-products Report

The reports are summarized as follows:

FAD REQUIREMENTS

1. Raw Water Fecal Coliform Concentrations (Section 141.71(a)(1)):

Requirements met. The Delaware Aqueduct effluent from Kensico Reservoir exhibited fecal coliform concentrations in water prior to disinfection at levels less than or equal to 20 CFU/100 mL in at least 90% of the samples collected in the six-month period from June 1, 2018 to November 30, 2018. The six month running percentage of samples collected with fecal coliform concentrations >20 CFU/100 mL was 2.19% for the Catskill/Delaware System for this time period.

2. Raw Water Turbidity (Section 141.71(a)(2)):

Requirements met. The raw water leaving Kensico Reservoir via the Delaware Aqueduct in compliance samples collected at DEL18DT, just prior to disinfection, exhibited turbidity levels less than or equal to 5 NTU on an ongoing basis during the month. Turbidity values did not exceed 1.0 NTU on the Catskill/Delaware System for the month.

3. Entry Point Chlorine Residual (Section 141.71(b)(1)(iii) and 141.72(a)(3)):

Requirements met. As required, continuous monitoring for free chlorine residual was maintained at the distribution entry points throughout the month and at no time did the concentration fall below 0.2 mg/L for more than four hours. The minimum daily free chlorine residual value for entry point readings for the Catskill/Delaware System from sites 1S03 (Tunnel 1) was 0.48 mg/L, 1S03A (Tunnel 2) was 0.85 mg/L, and 1S03B (Tunnel 3) was 0.52 mg/L for the Catskill/Delaware System.

The Croton Filtration Plant was online and continuously feeding the Croton Low Service entry point from November 1 to November 30, 2018. The Croton High Service entry point was online from November 19 at 9:27 AM to November 30, 2018. When High Service Pumps are off, distribution Tunnel 3 water intermittently back feeds through the High Service tunnel to the Low Service entry point to meet the distribution demands. The minimum daily free chlorine residual value for Croton entry point readings from sites 1SCL1 (Low Service) and 1SCH3 (High Service) were 0.64 mg/L and 0.35 mg/L, respectively.

4. Distribution System Disinfection Residuals (Section 141.71(b)(1)(iv) and 141.72(a)(4)):

Requirements met. All free chlorine residuals measured at compliance sites within the distribution system during the month were greater than or equal to 0.01 mg/L

A total of 1292 distribution samples were tested for free chlorine residual this month. For all distribution sites free chlorine residual ranged from 0.01 mg/L to 1.23 mg/L and averaged 0.62 mg/L for the month.

5. Trihalomethane Monitoring / HAA5 Monitoring (Section 141.71(b)(6)):

Requirements met. The System's TTHM System-Wide Running Average (RAA) for the fourth quarter of 2018 was 38 µg/L, and the Locational Running Annual Averages (LRAA) ranged from 29 µg/L to 48 µg/L. These values meet the MCL of 80 µg/L for LRAA and RAA. TTHM quarterly results averaged 42 µg/L.

The System's HAA5 RAA for the third quarter of 2018 was 43 µg/L, and the LRAA ranged from 38 µg/L to 49 µg/L. These values meet the MCL of 60 µg/L for LRAA and RAA. HAA5 quarterly results averaged 48 µg/L.

6. Total Coliform Monitoring (Section 141.71(b)(5)):

Requirements met. The results of monthly coliform monitoring performed in the distribution system are enclosed. A total of 795 compliance samples were tested for total coliform during this period. HPC were all ≤500 CFU/mL, equivalent to a measurable free chlorine residual. Zero percent of the samples had an undetectable free chlorine residual or HPC >500 CFU/mL. This meets the requirements that a free chlorine residual be maintained at representative points in the distribution system, and that no more than 5% of the free chlorine residual samples be undetectable in any two months. During the month, there was one (1) samples that tested positive for total coliform, and all samples were negative for *E. coli* during the month.

- A sample collected on 11/06/2018 from Site 44350 (sample station in front of 21-55 North Side of 34th Avenue, and first sampling station west of 24th street, 12 inch main) was positive for total coliform. Repeat sampling on 11/08/2018 was coliform negative at all locations.

OTHER WATER QUALITY MONITORING**7. Microbiological Monitoring:**

Coliform monitoring at distribution sites near first service connections, in response to source water having a turbidity >1.49 NTU, was not required this month, but all samples were negative for total coliform.

The analyses of 497 distribution Operational samples resulted in one (1) sample testing positive for total coliform. No *E. coli* were detected.

The analyses of 241 Pre-Finished samples resulted in one (1) sample testing positive for total coliform and for *E. coli*.

The analyses of 530 Autosampler Pre-finished samples resulted in one (1) sample testing positive for total coliform. No *E. coli* were detected.

8. Distribution Turbidity Monitoring:

For distribution sites turbidity ranged from <0.10 to 1.23 NTU and averaged 0.61 NTU for the month. This meets the MCL of 5 NTU for the monthly average of all distribution samples.

9. Color Monitoring:

The MCL of 15 units for color was met at each Catskill/Delaware and Croton entry point for the

month. Daily analyses of entry point samples (132 samples in total), produced monthly average color values of six (6) units for site 1S03 (Tunnel 1), seven (7) units for sites 1S03A (Tunnel 2) and 1S03B (Tunnel 3), and four (4) units for sites 1SCL1 (Croton Low Service) and 1SCH3 (Croton High Service).

10. Volatile Organic/TTHM/HAA5 Monitoring:

Monthly Results: Twenty-two (22) distribution site samples were collected for volatile organic contaminant (VOC) analysis and four (4) entry point samples. All VOC samples from distribution sites and entry points were below detection. Twenty-two (22) TTHM distribution samples were collected ranging from 27 µg/L to 56 µg/L. Four (4) TTHM entry point samples were collected ranging from 24 µg/L to 42 µg/L. Twenty-one (21) HAA5 distribution samples were collected ranging from 35 µg/L to 57 µg/L. Five (5) HAA5 entry point samples were collected ranging from 34 µg/L to 52 µg/L.

Please note the following corrections to the TTHM/HAA5 section of the October 2018 report. Twenty-one (21) TTHM distribution samples were collected from twenty (20) distribution sites ranging from 30 ug/L to 64 ug/L. Six (6) TTHM entry point samples were collected from five (5) entry point sites ranging from 28 ug/L to 59 ug/L. Distribution site 47550 and entry point site 1S07 were sampled twice because the chloroform results were initially non reportable. In addition, there were five (5) entry points active and sampled for HAA5.

11. Semivolatile and Other Organic Chemicals/parameters:

EPA Method 525.3 monitoring for 112 compounds of specified and unspecified organic parameters was conducted on November 13, 2018 at the three (3) Catskill/Delaware entry points (1S07, 1S03A, and 1S03B), at the Croton Low Service entry point (1SCL1) and at High Service entry points (1SCH3) which represented distribution Catskill/Delaware water at the time of sampling, and six (6) distribution points. All semi-volatile organic contaminant samples from distribution sites and entry points were below detection limits.

12. Fluoride Monitoring:

Daily analyses of entry point samples (132 samples in total), produced monthly average fluoride levels of 0.72 mg/L for sites 1S03 (Tunnel 1), 1S03A (Tunnel 2), 1S03B (Tunnel 3); 0.74 mg/L for site 1SCH3 (Croton High Service); and 0.75 mg/L for site 1SCL1 (Croton Low Service). The fluoride levels at the entry points did not exceed the MCL of 2.2 mg/L at any time during the month.

13. Unregulated Contaminant Monitoring Rule:

Third quarter monitoring for Additional Chemicals was conducted at two (2) source water, four (4) entry points, and 20 distribution DBP monitoring sites on November 7, 2018. Samples were tested for Bromide (ranged from 8.8 to 32 µg/L), TOC (ranged from 2.5 to 4.2 mg/L), Germanium (ND), Manganese (ranged from 4.0 to 20 µg/L), Method 552.3 for HAA9 (ranged from 38 to 78 mg/L), Method 541 (ND), Method 525.3 (ND), and Method 530 (QC failed and requires resampling). Resampling for Method 530 at entry point sites is scheduled for December 10, 2018. Contract laboratory reports of available data are included as pdfs on the disc of electronic files enclosed with this report.

14. Other Monitoring:

Sampling for Taste and Odor (T&O) compounds, Geosmin and 2-Methylisoborneol (MIB), continued in November. Analysis was conducted on 42 water samples from New Croton Reservoir. Results for Geosmin ranged from ND to 4.4 ng/L and for MIB were all below detection. Contract laboratory reports of available data are included as pdfs on the disc of electric files enclosed with this report.

Please feel free to contact me at (845) 340-7701 if you would like to discuss any of this information in greater detail.

Sincerely,



Steven C. Schindler
Director, Water Quality

Enclosure

cc:

Mr. James Flaherty, Inspector General for NYCDEP
Mr. Kenneth Kosinski, NYSDEC
Mr. David Kvinge, Westchester County Water Agency (by email only)
Mr. Huan Li, NYCDOHMH
Mr. Trevor McProud, NYCDOHMH
Mr. Andy Tse, NYSDOH (by email only)
Mr. Steven Zahn, NYSDEC – Region 2

bcc:

Electronic file:

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Summary of EPA Method 525 Report
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Taste & Odor Sampling Reports from EEA Lab

Summary of EPA Organic Method Reports

Inorganic (IOC), Specified Organic (SOC), Metals Monitoring:

All parameters for November 2018

(NYC_Micro_Summary_Compliance_201811.xls)
(NYC_Micro_Compliance_Positives_201811.xls)
(NYC_Micro_Compliance_Resamples_201811.xls)
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(NYC_Micro_Operational_Resamples_201811.xls)
(NYC_EP_Coliform_For_Source_Turb_GT_149_201811.snp)
(NYC_Monthly_Alldata_201811.xls|Micro)

(Entry_Shaft_C12_Onln_201811_Fig.pdf)
(Croton_Entry_Point_C12_Onln_201811_Fig.pdf)
(Entry_Shaft_C12_201811_Tbl.pdf)
(Croton_Entry_Point_C12_201811_Tbl.pdf)
(NYC_Micro_Summary_FCR_&_HPC_Compliance_201811.xls)
(NYC_Micro_Summary_FCR_&_HPC_Operational_201811.xls)
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(NYC_FCR_Monthly_Alldata_201811.xls)

(NYC_Turbidity_Monthly_Summary_201811.xls)
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(Entry_Point_Color_Monthly_201811.xls)

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(772753_UCMR4_Q3_20181107.pdf)
(771541_T&O_Sample_20181102.pdf, 772399_T&O_Sample_20181105.pdf, 775413_T&O_Sample_20181126.pdf, 774634_T&O_Sample_20181119.pdf, 773551_T&O_Sample_20181113.pdf, 772946_T&O_Sample_20181109.pdf, 772484_T&O_Sample_20181107.pdf)
(NYC_VOC_525_HAA5_Rpt_201811.pdf)

(NYC_Monthly_Alldata_201811.xls)

RAW WATER FECAL COLIFORM CONCENTRATIONS
(FAD Requirement)



NYCDEP Division of Watershed Water Quality Operations

Catskill/Delaware System Raw Water Fecal Coliform Compliance Report

Hawthorne Laboratory, ELAP Lab ID No. 10771
15 Skyline Drive, Hawthorne, NY 10532

Deputy Chief: David Robinson
914-345-4973

Catskill/Delaware Public Water System at Shaft 18 (DEL18DT) - Raw Water **Period: 09/16 To: 11/18**

Date	Number of Fecal Coliform Samples Examined per Month	Number of Fecal Coliform Samples with >20 colonies per 100 mL	Percent of Monthly Fecal Coliform Samples with >20 colonies per 100 mL	Percent of Monthly Fecal Coliform Samples with >20 colonies per 100 mL for Previous Six Months
9-16	30	0	0.00	0.00
10-16	31	0	0.00	0.00
11-16	30	0	0.00	0.00
12-16	31	0	0.00	0.00
1-17	31	0	0.00	0.00
2-17	28	0	0.00	0.00
3-17	31	0	0.00	0.00
4-17	30	0	0.00	0.00
5-17	31	0	0.00	0.00
6-17	30	0	0.00	0.00
7-17	31	0	0.00	0.00
8-17	31	0	0.00	0.00
9-17	30	0	0.00	0.00
10-17	31	0	0.00	0.00
11-17	30	0	0.00	0.00
12-17	31	0	0.00	0.00
1-18	31	0	0.00	0.00
2-18	28	1	3.57	0.55
3-18	31	0	0.00	0.55
4-18	30	0	0.00	0.55
5-18	31	0	0.00	0.55
6-18	30	0	0.00	0.55
7-18	31	0	0.00	0.55
8-18	31	0	0.00	0.00
9-18	30	2	6.67	1.09
10-18	31	2	6.45	2.17
11-18	30	0	0.00	2.19

David Robinson

12/5/18

Reported by: David Robinson, Deputy Chief, Hawthorne Water Quality Operations

12/4/2018

RAW WATER TURBIDITY
(FAD Requirement)



NYCDEP Division of Watershed Water Quality Operations

Water Systems Operation Report - Catskill/Delaware System

Hawthorne Laboratory, ELAP Lab ID No. 10771
15 Skyline Drive, Hawthorne, NY 10532

Deputy Chief: David Robinson
914-345-4973

Catskill/Delaware Public Water System at Shaft 18 (DEL18DT) - Raw Water Period: November, 2018

Date	Turbidity (NTU)						Total Coliform (Colonies per 100 mL)	Fecal Coliform
	12 AM	4 AM	8 AM	12 PM	4 PM	8 PM		
11/1/18	0.60	0.60	0.65	0.60	0.60	0.65	E80	<1
11/2/18	0.60	0.65	0.60	0.60	0.65	0.55	E20	E1
11/3/18	0.55	0.55	0.65	0.60	0.60	0.65	E10	<1
11/4/18	0.60	0.65	0.65	0.65	0.70	0.70	E10	E2
11/5/18	0.70	0.70	0.70	0.70	0.65	0.70	E70	E3
11/6/18	0.70	0.65	0.70	0.75	0.55	0.65	E40	E2
11/7/18	0.65	0.65	0.50	0.60	0.60	0.65	E60	E1
11/8/18	0.65	0.65	0.65	0.65	0.65	0.70	E30	E3
11/9/18	0.65	0.60	0.65	0.60	0.65	0.60	E20	<1
11/10/18	0.65	0.70	0.65	0.65	0.65	0.65	E80	E2
11/11/18	0.60	0.60	0.65	0.60	0.60	0.60	<20	E2
11/12/18	0.65	0.60	0.55	0.60	0.55	0.55	E20	<1
11/13/18	0.60	0.60	0.60	0.60	0.60	0.60	E80	<1
11/14/18	0.60	0.60	0.60	0.60	0.55	0.65	<10	<1
11/15/18	0.60	0.65	0.60	0.60	0.85	0.85	E30	E2
11/16/18	0.80	0.85	0.85	0.90	0.65	0.65	E20	E1
11/17/18	0.65	0.65	0.65	0.70	0.70	0.65	E30	E2
11/18/18	0.70	0.75	0.70	0.75	0.70	0.70	<10	E1
11/19/18	0.70	0.75	0.65	0.60	0.65	0.65	E10	E1
11/20/18	0.65	0.65	0.70	0.60	0.70	0.70	E10	E3
11/21/18	0.70	0.70	0.65	0.70	0.75	0.80	E6	E2
11/22/18	0.75	0.75	0.75	0.70	0.80	0.80	E12	E1
11/23/18	0.80	0.75	0.75	0.65	0.80	0.65	E12	E3
11/24/18	0.75	0.70	0.80	0.75	0.70	0.70	E12	<1
11/25/18	0.75	0.70	0.75	0.75	0.80	0.70	E16	<1
11/26/18	0.70	0.70	0.65	0.65	0.90	0.90	E10	<1
11/27/18	1.0	0.90	1.0	0.80	0.85	0.75	E10	E2
11/28/18	0.85	0.80	0.70	0.85	0.85	0.80	E22	<1
11/29/18	0.85	0.80	0.75	0.80	0.80	0.85	E12	E4
11/30/18	0.85	0.80	0.80	0.80	0.80	0.85	E6	<1

∴ Aqueduct Shutdown, CONF: Confluent Growth (+ indicates positive coliform growth), LE: Lab Error, FE: Field Error, E: estimated count based on non-ideal plate, >=: plate count may be biased low based on heavy growth, >: observed count replaced with dilution based value

1. Does a raw water turbidity M & R violation exist? Yes No
2. Does the turbidity reading exceed 5 NTU at any time? Yes No
If yes, check for MCL violation, and notify state by the end of the next business day.
3. Minimum number of microbiological samples required per week: 5
4. A daily microbiological sample is required every day the raw water turbidity exceeds 1 NTU.

Additional Comments:

David Robinson

12/5/18

Reported by: David Robinson, Deputy Chief, Hawthorne Water Quality Operations

12/4/2018

All results that fall within the scope of the NELAP program meet that program's requirements unless stated in the qualifiers addendum printed at the end of this report.

Report Printed on 12/04/2018 1:25 pm



NYCDEP Division of Watershed Water Quality Operations

Water Systems Operation Report - Qualifiers and Methods Addendum

Hawthorne Laboratory, ELAP Lab ID No. 10771
15 Skyline Drive, Hawthorne, NY 10532

Deputy Chief: David Robinson
914-345-4973

Data Qualifiers and Additional Notes

Date/Time	Site	Analytes Affected	Qualifier
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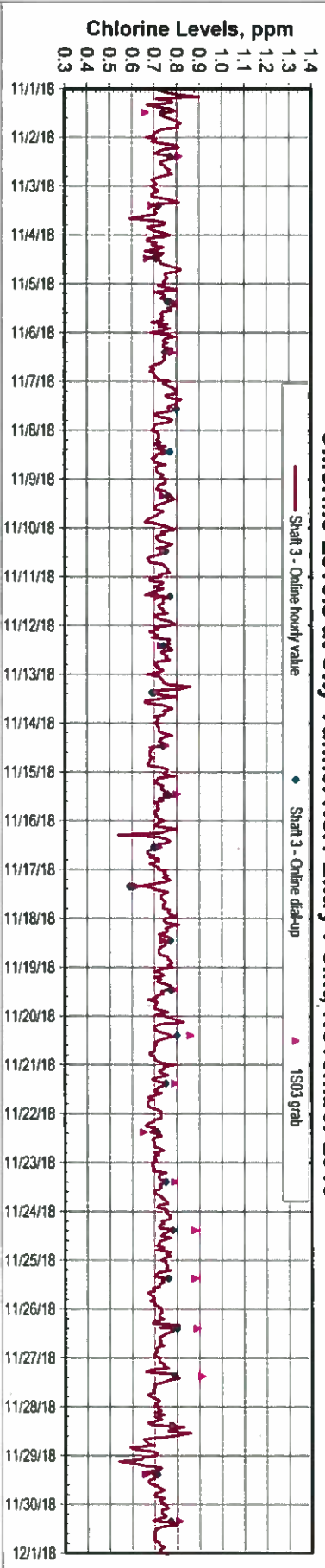
Analytical Methods

- Coliform, Fecal - SM 9222D (2006)
- Coliform, Total - SM 9222B (2006)
- Turbidity - SM 2130B (01)

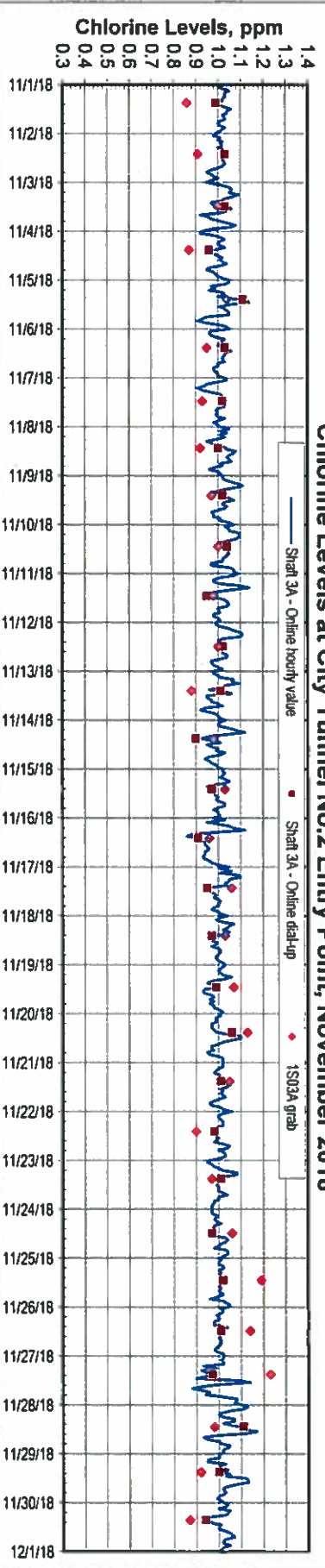
ENTRY POINT CHLORINE RESIDUAL
(FAD Requirement)

New York City Department of Environmental Protection
 Bureau of Water Supply
City Tunnel Entry Point Residual Chlorine Continuous Monitoring Results

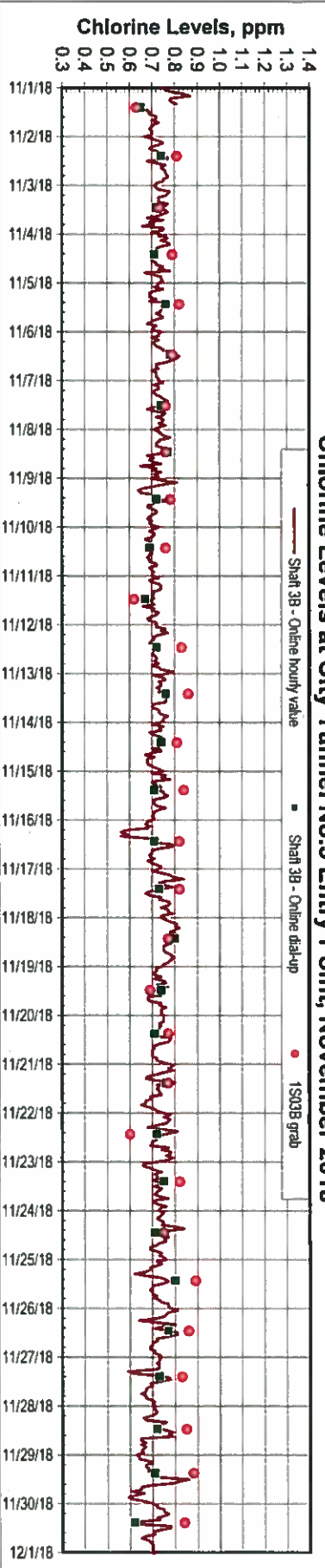
Chlorine Levels at City Tunnel No.1 Entry Point, November 2018



Chlorine Levels at City Tunnel No.2 Entry Point, November 2018



Chlorine Levels at City Tunnel No.3 Entry Point, November 2018



Note: Continuous monitoring of free chlorine residual (FCR) at distribution entry points was maintained. FCR was maintained above 0.2 ppm at all times. Since 11/4/18, all online readings, grab and online dial-up readings were recorded in Eastern Standard Time.

New York City Department of Environmental Protection
Bureau of Water Supply

Daily Minimum Chlorine Readings Recorded at Tunnel Entry Shafts for Catskill/Delaware System

Tunnel No.1 (Catskill) at Shaft 3		Tunnel No.2 (Delaware) at Shaft 3A		Tunnel No.3 (Cat/Del) at Shaft 3B		
Date	MinCl_1DL	Date	MinCl_2DL	Date	MinCl_3DL	
11/01/18	0.48	11/01/18	0.98	11/01/18	0.52	Data logger daily minimum value is obtained from the minimum value of all the valid every one minute values collected in one day.
11/02/18	0.67	11/02/18	0.92	11/02/18	0.67	
11/03/18	0.53	11/03/18	0.90	11/03/18	0.66	
11/04/18	0.65	11/04/18	0.90	11/04/18	0.63	
11/05/18	0.69	11/05/18	0.89	11/05/18	0.62	
11/06/18	0.68	11/06/18	0.88	11/06/18	0.69	
11/07/18	0.68	11/07/18	0.89	11/07/18	0.67	
11/08/18	0.66	11/08/18	0.93	11/08/18	0.65	
11/09/18	0.65	11/09/18	0.94	11/09/18	0.63	
11/10/18	0.64	11/10/18	0.94	11/10/18	0.66	
11/11/18	0.64	11/11/18	0.93	11/11/18	0.66	
11/12/18	0.66	11/12/18	0.95	11/12/18	0.68	
11/13/18	0.64	11/13/18	0.92	11/13/18	0.70	
11/14/18	0.65	11/14/18	0.90	11/14/18	0.65	
11/15/18	0.66	11/15/18	0.95	11/15/18	0.70	
11/16/18	0.54	11/16/18	0.85	11/16/18	0.56	
11/17/18	0.57	11/17/18	0.92	11/17/18	0.66	
11/18/18	0.72	11/18/18	0.95	11/18/18	0.74	
11/19/18	0.68	11/19/18	0.92	11/19/18	0.65	
11/20/18	0.68	11/20/18	0.94	11/20/18	0.68	
11/21/18	0.54	11/21/18	0.95	11/21/18	0.64	
11/22/18	0.64	11/22/18	0.95	11/22/18	0.68	
11/23/18	0.62	11/23/18	0.94	11/23/18	0.64	
11/24/18	0.66	11/24/18	0.96	11/24/18	0.68	
11/25/18	0.64	11/25/18	0.96	11/25/18	0.61	
11/26/18	0.68	11/26/18	0.96	11/26/18	0.63	
11/27/18	0.65	11/27/18	0.88	11/27/18	0.57	
11/28/18	0.54	11/28/18	0.92	11/28/18	0.63	
11/29/18	0.54	11/29/18	0.93	11/29/18	0.57	
11/30/18	0.68	11/30/18	0.94	11/30/18	0.60	

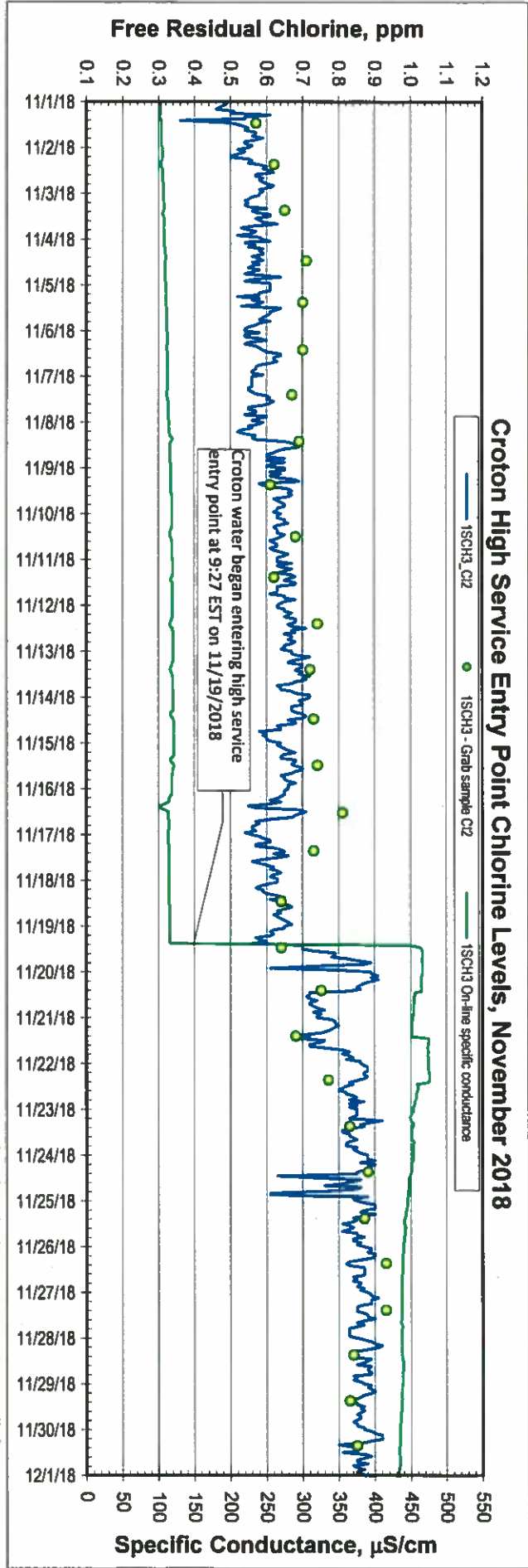
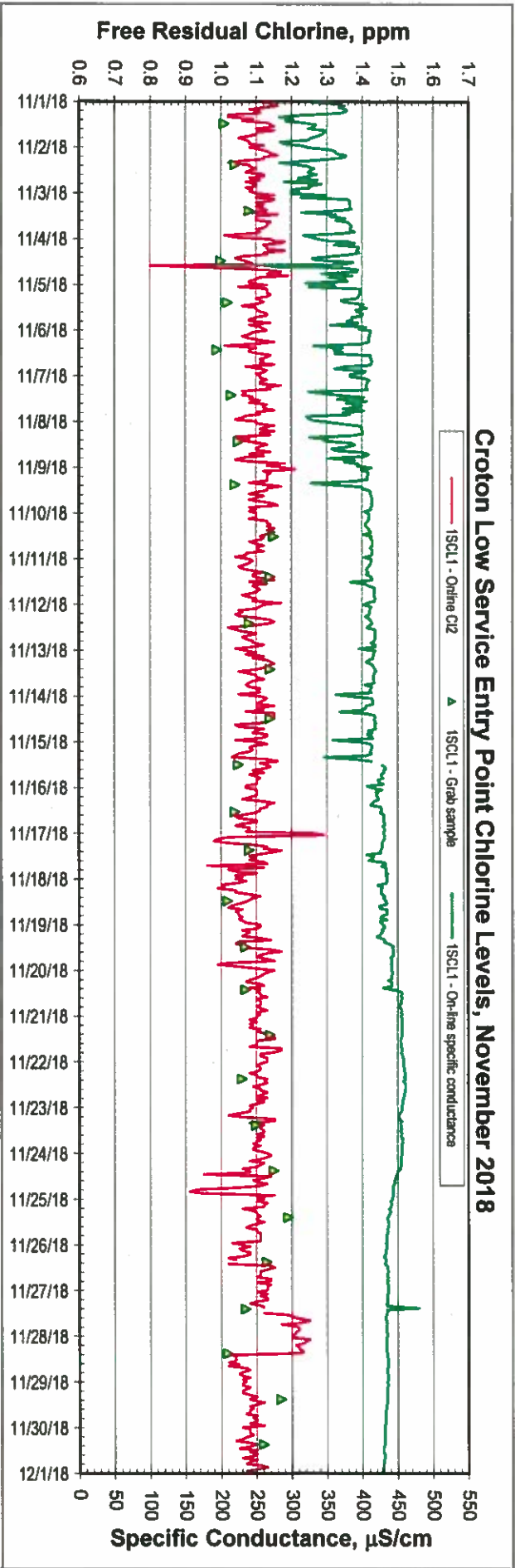
Legend: MinCl_1DL: Shaft 3's minimum chlorine level measured at the shaft and recorded at the location via data logger, in ppm.

MinCl_2DL: Shaft 3A's minimum chlorine level measured at the shaft and recorded at the location via data logger, in ppm.

MinCl_3DL: Shaft 3B's minimum chlorine level measured at the shaft and recorded at the location via data logger, in ppm.

New York City Department of Environmental Protection
Bureau of Water Supply

Croton Distribution Entry Point Residual Chlorine Continuous Monitoring Results



Note: Continuous monitoring of free chlorine residual (FCR) at distribution entry points was maintained. FCR was maintained above 0.2 ppm at all times. Since 11/4/18, all online readings, grab and online dial-up readings were recorded in Eastern Standard Time.

New York City Department of Environmental Protection
Bureau of Water Supply

Daily Minimum Chlorine Readings Recorded at Croton Distribution Entry Points

Low Service			High Service		
Date	MinCl 1SCL1	Remark 1	Date	MinCl 1SCH3	Remark 2
11/01/18	0.97		11/01/18		
11/02/18	0.97		11/02/18		
11/03/18	0.95		11/03/18		
11/04/18	0.64		11/04/18		
11/05/18	0.97		11/05/18		
11/06/18	1.00		11/06/18		
11/07/18	1.00		11/07/18		
11/08/18	0.80		11/08/18		
11/09/18	0.97		11/09/18		
11/10/18	0.97		11/10/18		No Croton water to HS
11/11/18	0.96		11/11/18		
11/12/18	0.94		11/12/18		
11/13/18	1.02		11/13/18		
11/14/18	1.00		11/14/18		
11/15/18	0.97		11/15/18		
11/16/18	1.03		11/16/18		
11/17/18	0.92		11/17/18		
11/18/18	0.98		11/18/18		
11/19/18	0.80		11/19/18	0.56	Croton water reached high service entry point at 9:27 EST on 11/19/2018
11/20/18	0.90		11/20/18	0.70	
11/21/18	0.89		11/21/18	0.63	
11/22/18	1.01		11/22/18	0.79	
11/23/18	1.01		11/23/18	0.78	
11/24/18	0.86		11/24/18	0.58	
11/25/18	1.03		11/25/18	0.81	
11/26/18	0.99		11/26/18	0.35	
11/27/18	1.05		11/27/18	0.78	
11/28/18	0.99		11/28/18	0.82	
11/29/18	1.01		11/29/18	0.81	
11/30/18	1.00		11/30/18	0.79	

Legend: MinCl_1SCL1: 1SCL1's minimum chlorine level measured and recorded at the location via data logger, in ppm.
 MinCl_1SCH3: 1SCH3's minimum chlorine level measured and recorded at the location via data logger, in ppm.
 Note: Croton water fed to High Service time period was determined by specific conductance greater than 150 uS/cm.

DISTRIBUTION SYSTEM DISINFECTION RESIDUAL
(FAD Requirement)

REPORT

**NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER SUPPLY, DISTRIBUTION LAB (NYSDOH ELAP #10770; USEPA #NY01351)**

**Residual Chlorine (mg/L) Distribution Samples
November 2018**

All Distribution Sites			
Samples	Min	Max	Average
1292	0.01	1.23	0.62

Hach DPD Method (analyte is not ELAP certified)

SAMPLE NUMBER	SAMPLE DATE	SAMPLE SITE	LOCATION TYPE	RESIDUAL CHLORINE	COMMENT
35667	11/27/18	1S03A	Reg Stop	1.23	Max
34188	11/12/18	77150	Reg Stop	0.01	Min
35114	11/21/18	3ISL4	Reg Stop	0.01	Min

A FCR is to be maintained at representative points in the distribution system and no more than 5% of the samples can be undetectable in any two months.

VOLATILE ORGANIC / THM / HAA MONITORING
(FAD Requirement)

REPORT

NYC DEPT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER SUPPLY DISTRIBUTION LAB (NYSDOH ELAP #10770; USEPA #NY01351)

SUMMARY OF DISINFECTION BY-PRODUCTS ANALYSES (µg/L)

FOURTH QUARTER, 2018

Site	Location	TTHM (µg/L) ^(a)			HAA5 (µg/L) ^(b)						
		Sample Date	Analysis Date	Result	LRAA	OEL	Analysis Date	Result	LRAA	OEL	
15150	SS - IFO 1420 E/S Grand Concourse, 1st SS S/O E 171st St, 20"	11/7/18	11/7/18	27	36	39	11/9/18	37	39	41	
18650	SS - N/S Dewey Ave, btw Quincy & Swinton Aves, 12"	11/7/18	11/7/18	34	30	35	11/8/18	46	38	43	
23450	SS - N/S Jefferson Avenue, 2nd SS W/O Lewis Avenue, 20"	11/7/18	11/8/18	40	38	44	11/10/18	46	43	46	
24350	SS - W/S Brighton 11th Street, 2nd SS S/O Cass Place, 12"	11/7/18	11/9/18	45	42	48	11/8/18	57	48	53	
31750	SS - IFO 427 N/S W 26th St, 2nd SS W/O 9th Ave, 12"	11/7/18	11/8/18	56	45	54	11/9/18	48	44	48	
31850	SS - IFO 82 S/S Warren St, 2nd SS E/O Greenwich St, 12"	11/7/18	11/8/18	42	42	48	11/9/18	54	47	53	
32350	SS - IFO 116 E/S Ave C, 2nd SS N/O E 7th St, 12"	11/7/18	11/8/18	47	41	48	11/10/18	49	45	48	
33450	SS - IFO 135 N/S W 112th St, 2nd SS W/O St Nicholas Ave, 12"	11/7/18	11/8/18	41	38	43	11/9/18	62	49	56	
33950	SS - N/S E 104th Street, 2nd SS E/O 3rd Avenue, 12"	11/7/18	11/8/18	44	39	45	11/9/18	58	49	55	
37950	SS - IFO 325 N/S E 12th Street, 2nd SS E/O 2nd Ave, 12"	11/7/18	11/8/18	47	41	48	11/9/18	52	46	51	
38250	SS - IFO 309 N/S E 87th St, 2nd SS W/O 1st Ave, 12"	11/7/18	11/8/18	33	35	39	11/9/18	49	46	51	
39650	SS - IFO 229 N/S E 49th St, 2nd SS W/O 2nd Ave, 12"	11/7/18	11/8/18	32	29	33	11/9/18	44	39	43	
44350	SS - IFO 21-55 N/S 34th Ave, 1st SS W/O 24th St, 12"	11/7/18	11/7/18	51	48	55	11/8/18	51	49	52	
45250	SS - E/S Beach 58th St, 2nd SS N/O Beach Channel Drive, 12"	11/7/18	11/7/18	40	33	39	11/9/18	47	40	45	
50250	SS - IFO 937 N/S Victory Blvd, 2nd SS E/O Highland Ave, 20"	11/7/18	11/8/18	40	32	38	11/8/18	53	45	50	
50750	SS - E/S Woodhull Ave, 1st SS S/O Alboume Ave, 8"	11/7/18	11/8/18	41	41	46	11/9/18	41	38	39	
50850	SS - IFO 512 W/S Arlene St, 1st SS N/O Dawson Ct, 12"	11/7/18	11/8/18	41	34	39	11/10/18	43	43	45	
52050	SS - IFO 218 W/S Nicholas Ave, 1st SS S/O Charles Ave, 12"	11/7/18	11/8/18	43	34	40	11/9/18	53	46	51	
58650	SS - IFO 510 W/S Main St, 2nd SS S/O Hylan Blvd, 12"	11/7/18	11/8/18	52	41	49	11/10/18	35	40	40	
77650	SS - OPP 110-52 E/S 207th St	11/7/18	11/8/18	38	32	38	11/9/18	38	38	40	
		TTHM			27	QUARTERLY MINIMUM			HAA5		
					56	QUARTERLY MAXIMUM					
					42	QUARTERLY AVERAGE					
					38	SYSTEM-WIDE RAA					

^(a) : analyzed by EPA Method 524.3

^(b) : analyzed by EPA Method 552.3

LRAA: The Locational Running Annual Average (LRAA) is calculated by taking the value of this quarter and the three previous consecutive quarters.

RAA: The System-wide Running Annual Average (RAA) is calculated by taking the average of the Quarterly Average of this quarter and the three previous consecutive quarters.

OEL: The Operational Evaluation Level (OEL) is calculated by averaging 2 times this quarter's value and the two previous consecutive quarters.

Both the LRAA and the System-wide RAA is not to exceed 80 µg/L for TTHM and 60 µg/L for HAA5.

TOTAL COLIFORM MONITORING
(FAD Requirement)

REPORT

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
 BUREAU OF WATER SUPPLY, DISTRIBUTION LAB (NYSDOH ELAP #10770; USEPA #NY01351)

Results for Microbiological Quality
 Free Chlorine Residual and Heterotrophic Plate Count
 Compliance Samples

11/1/2018 to 11/30/2018

Location	Number of Sampling Points	Number of Samples Collected	Number of Samples Tested (Free Chlorine Residual)	Number of Samples Tested (Heterotrophic Plate Count)	Number of Samples with Free Chlorine Residual *		Range of Heterotrophic Plate Count (CFU/mL) for Free Chlorine Residual of 0.00 mg/L **	Number of Samples with Free Chlorine Residual of 0.00 mg/L and HPC > 500	Percent of Samples with Free Chlorine Residual of 0.00 mg/L and HPC > 500 ***
					< 0.20 mg/L	0.00 mg/L			
Bronx	46	131	131	83	0	0	-	0	0.0%
Brooklyn	70	194	194	126	4	0	-	0	0.0%
Manhattan	56	162	162	110	13	0	-	0	0.0%
Queens †	79	226	226	150	17	0	-	0	0.0%
Staten Island	28	82	82	56	6	0	-	0	0.0%
Ground Water Supply †	-	-	-	-	-	-	-	-	-
Total	279	795	795	525	40	0	-	0	0.0%

* Free chlorine residual is determined by Hach DPD Method (analyte is not ELAP certified).
 ** Heterotrophic plate count is determined by method SM 9215 B, PCA medium, 35°C, 48hrs. HPC result ≤ 500 CFU/mL is equivalent to a measurable FCR.
 *** No more than 5 % of FCR samples shall be undetectable in any 2 consecutive months.

† There was no groundwater sample this month because no well was in operation to distribution.

Supervisor: Royce Regard Date: 12/6/18

Director: Ken DeL Date: 12/6/18

REPORT

NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
 BUREAU OF WATER SUPPLY, DISTRIBUTION LAB (NYSDOH ELAP #10770; USEPA #NY01351)

Summary of Results for Microbiological Quality
 Compliance Samples
 11/1/2018 to 11/30/2018

Location	Number of Sampling Points	Number of Samples Collected	Number of Samples Tested	Number of Samples with Positive Coliform *	Number of Samples with Positive E. coli *	Percent of Samples with Positive Coliform **
Bronx	46	131	131	0	0	0.0%
Brooklyn	70	194	194	0	0	0.0%
Manhattan	56	162	162	0	0	0.0%
Queens ***	79	226	226	1	0	0.4%
Staten Island	28	82	82	0	0	0.0%
Ground Water Supply ***	-	-	-	-	-	-
Total	279	795	795	1	0	0.1%

* As determined by Colifert Quanti-Tray-18 Method (SM 9223 B).

** If more than 5.0 % of all monthly TCR compliance samples are positive for total coliform, a Level I Assessment must be conducted.

*** There was no groundwater sample this month because no well was in operation to distribution.

Supervisor: Rupe Agard Date: 12/07/18

Director: Ken B... Date: 12/6/18

MICROBIOLOGICAL MONITORING

REPORT

**NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER SUPPLY, DISTRIBUTION LAB (NYSDOH ELAP #10770; USEPA #NY01351)**

**Coliform Monitoring Results at Sample Sites near the First Service Connection
When Source Water Turbidity Exceeds 1.49 NTU**

November 2018

Source water		Distribution site near first service connection			
Date Turb>1.49 NTU	System	Sample Date	Sample Site	Coliform *	E.coli *

No official four-hour turbidity readings from Cat-Del source water were greater than 1.5 NTU this month.

* As determined by Colifert Quanti-Tray-18 Method (SM 9223B). Results expressed in "MPN /100mL."

DISTRIBUTION TURBIDITY MONITORING

REPORT

**NEW YORK CITY DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER SUPPLY, DISTRIBUTION LAB (NYSDOH ELAP #10770; USEPA #NY01351)**

Turbidity (NTU) Distribution Samples

November 2018

All Distribution Sites			
Samples	Min	Max	Average
1292	<0.10	1.23	0.61

Analytical Method SM 2130 B

SAMPLE NUMBER	SAMPLE DATE	SAMPLE SITE	LOCATION TYPE	TURBIDITY	COMMENT
33390	11/3/18	43550	Reg Stop	1.23	Max
33085	11/1/18	3SC26	Reg Stop	<0.10	Min
33505	11/5/18	3SC26	Reg Stop	<0.10	Min

The monthly average of all distribution samples is not to exceed 5 NTU.

COLOR MONITORING

REPORT

NYC DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER SUPPLY DISTRIBUTION LABORATORY (NYSDOH ELAP #10770; USEPA #NY01351)

Color (U) for Distribution Entry Points

November 2018

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Catskill/Delaware 1S03 (Tunnel 1)	6	6	6	6	6	6	6	7	6	6	6	7	6	4	6	6	7	7	6	7	6	7	7	7	7	6	7	7	6	8
Catskill/Delaware 1S03A (Tunnel 2)	6	6	6	6	7	6	6	6	6	7	7	6	6	6	6	7	7	6	7	7	7	8	7	7	7	7	7	12	7	10
Catskill/Delaware 1S03B (Tunnel 3)	6	6	6	6	6	7	6	7	6	6	7	6	6	5	6	7	7	6	7	6	7	7	7	6	7	7	7	14	6	7
Croton System 1SCL1 (a)	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	3
Croton System 1SCH3 (b)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	4	4	4	4	4	4	4	4	4	3

Analytical Method SM 2120 B. Apparent color.

The average of two consecutive samples from the same site is not to exceed the MCL of 15 color units.

(a) Croton System online as of 9/26/18 at 1SCL1.

(b) Croton water began feeding to high service on 11/19/18.

Entry Point	Samples	Minimum	Maximum	Average
Catskill/Delaware 1S03 (Tunnel 1)	30	4	8	6
Catskill/Delaware 1S03A (Tunnel 2)	30	6	12	7
Catskill/Delaware 1S03B (Tunnel 3)	30	5	14	7
Croton System 1SCL1 (a)	30	3	4	4
Croton System 1SCH3 (b)	12	3	5	4

Supervisor 

Date 12/06/18

Director 

Date 12/6/18

FLUORIDE MONITORING

REPORT

NYC DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER SUPPLY DISTRIBUTION LABORATORY (NYSDOH ELAP #10770; USEPA #NY01351)

Fluoride (mg/L) for Distribution Entry Points
November 2018

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Catskill/Delaware 1S03 (Tunnel 1)	0.73	0.74	0.72	0.73	0.72	0.72	0.75	0.74	0.71	0.72	0.72	0.72	0.73	0.72	0.74	0.72	0.71	0.74	0.72	0.71	0.71	0.73	0.72	0.71	0.73	0.73	0.70	0.72	0.72	0.71
Catskill/Delaware 1S03A (Tunnel 2)	0.74	0.73	0.71	0.73	0.72	0.73	0.74	0.75	0.72	0.73	0.72	0.72	0.74	0.72	0.73	0.73	0.71	0.73	0.73	0.71	0.72	0.73	0.72	0.73	0.73	0.70	0.72	0.72	0.70	0.70
Catskill/Delaware 1S03B (Tunnel 3)	0.74	0.74	0.71	0.73	0.72	0.72	0.74	0.74	0.72	0.72	0.71	0.72	0.73	0.72	0.73	0.72	0.71	0.73	0.72	0.72	0.71	0.73	0.72	0.71	0.73	0.73	0.71	0.73	0.72	0.70
Croton System 1SCL1 (a)	0.77	0.76	0.82	0.73	0.76	0.76	0.80	0.75	0.75	0.75	0.73	0.75	0.80	0.75	0.74	0.74	0.71	0.80	0.78	0.77	0.77	0.77	0.74	0.72	0.73	0.72	0.72	0.72	0.75	0.70
Croton System 1SCH3 (b)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.78	0.78	0.78	0.76	0.73	0.71	0.73	0.71	0.73	0.74	0.70	


Analytical Method SM 4500 FC (97)

The average of two consecutive samples from the same distribution entry point site is not to exceed the MCL of 2.2 ppm.

(a) Croton System online as of 9/26/18 at 1SCL1.

(b) Croton water began feeding to high service on 11/19/18.

Entry Point	Samples	Minimum	Maximum	Average
Catskill/Delaware 1S03 (Tunnel 1)	30	0.70	0.75	0.72
Catskill/Delaware 1S03A (Tunnel 2)	30	0.70	0.75	0.72
Catskill/Delaware 1S03B (Tunnel 3)	30	0.70	0.74	0.72
Croton System 1SCL1 (a)	30	0.70	0.82	0.75
Croton System 1SCH3 (b)	12	0.70	0.78	0.74

Supervisor  Date 12/06/18

Director  Date 12/16/18